CLAIMS

1. A method of processing a microfeature workpiece, comprising:

   supporting a microfeature workpiece by an unheated support in an interior of a processing chamber;

   contacting a surface of the microfeature workpiece with an etchant liquid, a wall of the processing chamber being substantially non-reactive with the etchant liquid;

   heating the etchant liquid by delivering radiation from a radiation source through the wall of the processing chamber to heat the etchant liquid, the wall being highly transmissive of an operative wavelength range of the radiation and the etchant liquid being absorptive of the operative wavelength range;

   controlling the radiation source to maintain a temperature of the etchant liquid at or above a target process temperature to etch the surface of the microfeature workpiece; and

   removing the etched microfeature workpiece from the processing chamber.

2. The method of claim 1 further comprising adding the etchant liquid to the processing space at a first temperature that is below the target process temperature.

3. The method of claim 1 wherein the radiation is delivered substantially uniformly across the surface of the microfeature workpiece.

4. The method of claim 1 wherein the radiation comprises infrared radiation.

5. The method of claim 1 further comprising enclosing the microfeature workpiece within the interior of the processing chamber.

6. The method of claim 1 wherein a temperature of the wall of the processing chamber is no greater than the temperature of the etchant liquid when the etchant liquid is at or above the target process temperature.

7. The method of claim 6 wherein the processing chamber includes a base, a temperature of the base of the processing chamber being no greater than the temperature of the etchant liquid when the etchant liquid is at or above the target process temperature.

8. The method of claim 1 wherein the radiation is substantially the only heat source for heating the etchant liquid from a first temperature to the target process temperature, which is higher than the first temperature.

9. The method of claim 1 wherein an inner surface of the processing chamber comprises a fluoropolymer, further comprising contacting the inner surface of the processing chamber with the etchant liquid.

10. The method of claim 1 wherein etching the surface of the microfeature workpiece yields a resultant etchant, the method further comprising determining at least one chemical property of the microfeature workpiece by chemically analyzing the resultant etchant.

11. A method of processing a microfeature workpiece comprising:

positioning a microfeature workpiece on an unheated support in an interior of a processing chamber, the processing chamber having an inner surface comprising a polymer;

enclosing the microfeature workpiece within the interior of the processing chamber;

contacting a surface of the microfeature workpiece with an etchant liquid at a first temperature, the etchant liquid being substantially non-reactive with the inner surface of the processing chamber;

heating the etchant liquid from the first temperature to a second temperature using an infrared heat source positioned entirely outside the enclosed processing chamber, the second temperature being higher than the first temperature and the second temperature promoting etching of a surface of the microfeature workpiece;

etching the surface of the microfeature workpiece with the etchant liquid at or above the second temperature.

12. The method of claim 11 wherein the radiation is delivered substantially uniformly across the surface of the microfeature workpiece.

13. The method of claim 11 wherein the infrared radiation comprises near infrared radiation.

14. The method of claim 11 wherein a temperature of the wall of the processing chamber is no greater than the temperature of the etchant liquid when the etchant liquid is at or above the second temperature.

15. The method of claim 14 wherein the processing chamber includes a base, a temperature of the base of the processing chamber being no greater than the temperature of the etchant liquid when the etchant liquid is at or above the second temperature.

16. The method of claim 11 wherein the infrared radiation is substantially the only heat source for heating the etchant liquid from the first temperature to the second temperature.

17. The method of claim 11 wherein the inner surface of the processing chamber comprises a fluoropolymer, further comprising contacting the inner surface of the processing chamber with the etchant liquid.

18. The method of claim 11 wherein etching the surface of the microfeature workpiece yields a resultant etchant, the method further comprising determining at least one chemical property of the microfeature workpiece by chemically analyzing the resultant etchant.

19. A method of processing a microfeature workpiece, comprising:

supporting a microfeature workpiece with an unheated support in an interior of a processing chamber, a wall of the processing chamber comprising a polymer;

contacting a surface of the microfeature workpiece with a processing fluid;

delivering infrared radiation through the wall of the processing chamber to heat the processing fluid from a first temperature to a higher second temperature that promotes processing of the surface of the microfeature workpiece, the wall being substantially infrared transparent and the processing fluid being absorptive of the infrared radiation; and

maintaining a temperature of the processing fluid at or above the second temperature for a process period to process the surface of the microfeature workpiece, a temperature of the wall of the processing chamber being no greater than the temperature of the processing fluid during the process period.

20. The method of claim 19 wherein the processing fluid comprises an etchant liquid and processing the surface of the microfeature workpiece comprises etching the surface of the microfeature workpiece.

21. The method of claim 19 wherein an inner surface of the processing chamber comprises a fluoropolymer and the processing fluid comprises an etchant liquid, further comprising contacting the inner surface of the processing chamber with the etchant liquid.

22. The method of claim 19 further comprising adding the processing fluid to the processing space at an introduction temperature that is below the second temperature.

23. The method of claim 19 further comprising adding the processing fluid to the processing space at the first temperature that is below the second temperature.

24. The method of claim 19 wherein the radiation is delivered substantially uniformly across the surface of the microfeature workpiece.

25. The method of claim 19 wherein the radiation comprises infrared radiation.

26. The method of claim 19 further comprising enclosing the microfeature workpiece within the interior of the processing chamber.

27. The method of claim 19 wherein the radiation is substantially the only heat source for heating the processing fluid from the first temperature to the second temperature.

28. The method of claim 19 wherein processing the surface of the microfeature workpiece yields a resultant fluid, the method further comprising determining at least one chemical property of the microfeature workpiece by chemically analyzing the resultant fluid.

29. A microfeature workpiece processing system comprising:
    a processing chamber having a wall and an interior adapted to hold an etchant liquid, the wall comprising a polymer that is substantially non-reactive with the etchant liquid;
    an unheated support adapted to support a microfeature workpiece in the interior of the processing chamber for processing; and

a heating system positioned outside the processing chamber and adapted to selectively heat the etchant liquid, the heating system comprising a radiation source adapted to generate radiation in an operative wavelength range and oriented to direct the radiation through the wall of the processing chamber, the wall being substantially transparent to the operative wavelength range of the radiation and the etchant absorbing the operative wavelength range of the radiation.

30. The microfeature workpiece processing system of claim 29 wherein the processing chamber has an open configuration adapted for introducing a microfeature workpiece to the interior of the processing chamber and a processing configuration adapted for enclosing a microfeature workpiece in the interior for processing.

31. The microfeature workpiece processing system of claim 29 wherein the polymer comprises a fluoropolymer.

32. The microfeature workpiece processing system of claim 29 wherein the polymer comprises a fluoropolymer selected from the group consisting of perfluoroalkoxylalkane (PFA), polytetrafluoroethylene (PTFE), and fluorinated ethylene-propylene (FEP).

33. The microfeature workpiece processing system of claim 29 wherein the polymer comprises a first fluoropolymer and wherein the processing chamber includes a removable cover comprising a second fluoropolymer that is different from the first fluoropolymer.

34. The microfeature workpiece processing system of claim 29 wherein the operative wavelength is between about 700 nm and about 1 mm.

35. The microfeature workpiece processing system of claim 29 wherein the radiation source comprises an infrared radiation source.

36. The microfeature workpiece processing system of claim 29 wherein the radiation source is substantially the only heat source for heating the etchant liquid in the processing chamber.

37. The microfeature workpiece processing system of claim 29 wherein the radiation source is adapted to deliver radiation substantially uniformly across the surface of the microfeature workpiece.

38. The microfeature workpiece processing system of claim 29 wherein the radiation generated by the radiation source comprises the operative wavelength range and wavelengths outside the operative wavelength range.

39. The microfeature workpiece processing system of claim 29 further comprising a conduit for delivering the etchant liquid to the processing chamber prior to heating the etchant liquid with the heating system.

40. The microfeature workpiece processing system of claim 29 further comprising a programmable controller operatively coupled to the heating system, the controller being programmed to control the radiation source to heat the etchant in the processing chamber from a first temperature to a higher second temperature to promote etching.

41. A microfeature workpiece processing system comprising:
    a processing chamber having a wall and defining an interior in which a microfeature workpiece can be enclosed, the wall comprising a fluoropolymer;
    a support adapted to support the microfeature workpiece in the interior of the processing chamber;

a conduit adapted to deliver a processing liquid to the interior of the processing chamber for contact with a surface of the microfeature workpiece;

an infrared radiation source positioned outside the processing chamber and oriented to direct infrared radiation through the wall of the processing chamber, the infrared radiation source comprising substantially the sole heat source for heating the processing liquid; and

a programmable controller, the controller being programmed to control the infrared radiation source to heat the processing liquid in the interior of the processing chamber from a first temperature to a higher second temperature to promote processing of the surface of the microfeature workpiece with the processing liquid.

42. The microfeature workpiece processing system of claim 41 wherein the processing liquid comprises an etchant liquid and the fluoropolymer is substantially non-reactive with the etchant liquid.

43. The microfeature workpiece processing system of claim 41 wherein the processing chamber has an open configuration adapted for introducing a microfeature workpiece to the interior of the processing chamber and a processing configuration adapted for enclosing a microfeature workpiece in the interior for processing.

44. The microfeature workpiece processing system of claim 41 wherein the fluoropolymer is selected from the group consisting of perfluoroalkoxylalkane (PFA), polytetrafluoroethylene (PTFE), and fluorinated ethylene-propylene (FEP).

45. The microfeature workpiece processing system of claim 41 wherein the processing fluid is an etchant liquid and the fluoropolymer is substantially non-reactive with the etchant liquid.

46. The microfeature workpiece processing system of claim 41 wherein the fluoropolymer of the wall comprises a first fluoropolymer and wherein the processing chamber includes a removable cover comprising a second fluoropolymer that is different from the first fluoropolymer.

47. The microfeature workpiece processing system of claim 41 wherein the infrared radiation source is adapted to deliver radiation substantially uniformly across the surface of the microfeature workpiece.

48. The microfeature workpiece processing system of claim 41 wherein the infrared radiation source is adapted generate radiation that comprises the infrared radiation and non-infrared radiation.